WE CLAIM:

1. A method of lowering elevated plasma total homocysteine (tHcy) levels in a subject with end stage renal disease comprising administering an effective amount of Mesna, or a derivative thereof, to a subject having end stage renal disease (ESRD).
2. The method according to claim 1, wherein the derivative of Mesna is diMesna.
3. The method according to claim 1 or 2, wherein by lowering the tHcy levels in the plasma of a patient with ESRD, the risk of cardiovascular-related diseases is also reduced.
4. The method according to claim 3, wherein the cardiovascular-related disease is selected from myocardial infarction, stroke, thrombosis and atherosclerosis,
5. The method according to claim 4, wherein thrombosis is a thrombotic event selected from venous thrombosis, dialysis access thrombosis and thrombotic stroke.
6. The method according to any one of claims 1-4, further comprising performing dialysis on the subject.
7. The method according to claim 5, wherein the dialysis is performed during or subsequent to administration of Mesna or derivative thereof.
8. The method according to any one of claims 1-6, wherein the subject is human.
9. The method according to any one of claims 1-7 wherein Mesna, or a derivative thereof, is administered at a dosage of about 0.5 – 180 mg/kg per week.
10. The method according to claim 8, wherein Mesna, or a derivative thereof, is administered at a dosage of about 1.0-25 mg/kg per week.
11. The method according to claim 9, wherein Mesna, or a derivative thereof, is administered at a dosage of about 7.5-15 mg/kg per week.
12. The method according to claim 8, wherein Mesna, or a derivative thereof, is administered at a dose of between about 2.5 to 5 mg/kg thrice weekly.
13. The method according to any one of claims 1-11 wherein Mesna, or a

derivative thereof, is administered intravenously or orally.

14. The method according to any one of claims 1-12, wherein Mesna, or a derivative thereof, is administered in combination with other agents that lower plasma thiol levels or in combination with other types of treatment for diseases associated with elevated plasma thiol levels.

15. The method according to claim 13, wherein Mesna, or a derivative thereof, is administered in combination with B vitamins and/or folic acid

16. A use of Mesna, or a derivative thereof, to lower elevated plasma total homocysteine (tHcy) levels in a subject with ESRD

17. A use of Mesna, or a derivative thereof, to prepare a medicament to lower elevated plasma total homocysteine (tHcy) levels in a subject with ESRD.

18. A use of Mesna or disMesna and dialysis to lower elevated total plasma Hcy levels in a subject with ESRD.